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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,516	07/14/2004	Graham Cross	CH920010024US1 (8728-698)	6389

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EXAMINER	
PHAM, THANHHA S	

ART UNIT	PAPER NUMBER
2813	

DATE MAILED: 12/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/501,516	CROSS ET AL.	
	Examiner	Art Unit	
	Thanhha Pham	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *32-56* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *32-35, 40-47, 52-55* is/are rejected.

7)☒ Claim(s) *36-39,48-51 and 56* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to Applicant's Response dated 10/5/2006.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 31-35, 40-42 and 52-55 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Niederman et al [US 5,994,160].

► With respect to claims 31, 34-35, Niedermann et al (figs 1-9, cols 1-11) discloses the claimed method forming a microstructure, comprising:

depositing a seed material (col 8 lines 8-11: fine diamond particles) on a substrate (8c, silicon, fig 4D);

growing a nanotube (diamond tip 3c, fig 4D, col 8 lines 8-17) from the seed material;

depositing microstructure material (24c, fig 4D, col 8 lines 12-20) on the substrate to embed the nanotube in the microstructure material; and

detaching the substrate to release the microstructure (figs 4D-4G).

► With respect to claim 32, the microstructure material (24c, fig 4D) would be shaped prior to the step of detaching the substrate to release the microstructure (fig 4G)

► With respect to claim 40, Niedermann et al (col 8 lines 12-20) discloses growing of the nanotube comprises: heating the substrate in vacuum conditions; and applying a field to the substrate (*plasma deposition would be practiced in heating, vacuum conditions an applying a field*)

► With respect to claims 41-42, parameters for growing the nanotube is considered to involve routine optimization while has been held to be within the level of ordinary skill in the art. As noted in In re Aller 105 USPQ233, 255 (CCPA 1955)., the selection of reaction parameters such as temperature and concentration would have been obvious.

> "Normally, it is to be expected that a change in temperature, or in concentration, or in both, would be an unpatentable modification. Under some circumstances, however, changes such as these may be impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art...such ranges are termed "critical ranges and the applicant has the burden of proving such criticality... More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."
>
> *See also In re Waite 77 USPQ 586 (CCPA 1948); In re Scherl 70 USPQ 204 (CCPA 1946); In re Irmscher 66 USPQ 314 (CCPA 1945); In re Norman 66*

USPQ 308 (CCPA 1945); In re Swenson 56 USPQ 372 (CCPA 1942); In re Sola 25 USPQ 433 (CCPA 1935); In re Dreyfus 24 USPQ 52 (CCPA 1934).

► With respect to claims 52-53, Niedermann et al (figs 4B-4C, col 7-8) shows depositing of the seed material comprises: depositing a photoresist layer on the substrate; forming an aperture in the photoresist layer wherein forming of the aperture comprise under-etching the photoresist layer to produce a cavity in the photoresist layer (developing photorsist layer); masking the substrate with the photoresist layer (22c) to locate the seed material at a site on the substrate defined by the aperture; and removing the photoresist layer to remove surplus seed material.

► With respect to claim 54-55, Niedermann et al (figs 4B-4C, col 7-8 & col 5 lines 36-60) shows forming a tip image (13c, fig 4B) in the substrate to produce a mold for receiving the microstructure material wherein forming of the tip image comprises: depositing a photoresist layer on the substrate; forming an aperture in the photoresist layer; and under etching the substrate beneath the photoresist layer to create the tip image (photo etch using mask – col 5 lines 38-60).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 43-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niedermann et al [US 5,994,160] in view of Matsui et al [US 6,960,334].

Niedermann et al substantially discloses the claimed method including using plasma to grow nanotube, Niederman et al does not expressly mention about using electric field or magnetic field for plasma growing or deposition technique.

However, applying electric field or magnetic field are known technique of plasma deposition/growing. See Matsui et al as an evident that shows using electric field or magnetic field in plasma depositing/growing nanotubes.

Therefore, at the time of invention, in view of Matsui et al, it would have been obvious for those skill in the art to modify process of Niedermann et al by using the electric field or magnetic field as being claimed to efficiently growing the nanotube for microstructure.

Allowable Subject Matter

3. Claims 36-39, 48-51 and 56 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

4. Applicant's arguments filed 10/5/2006 have been fully considered but they are not persuasive.

► In regard to Applicant's argument on pages 7-8, Applicant argues that Niedermah does not discloses the limitation of claim 32 since:

a) Applicant's disclosures states and shows the layer a of cantilever material on the sacricial layer embedding the nanotube therein.

b) Niedemann discloses "the tip 3C is fasten to a ring-shape base 24C conresponding to the diamond film which is formed in the region 23C" that does not meet limitation of claim 32 since "a microstructure material is not deposited on the substrate to embed the nanotube in the microstrucrure material"

In regard to **a),** in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., cantilever material and sacrifical material) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Contradict to **b),** Niedemann discloses depositing the microstructure material (24c) on the substrate (8c) to embed the nanotube (tip 3C) in the microstructure material (the nanotube 3C is fastened/fix firmly in surrounding mass of the microstructure material 24c). Niedemann, therefore, still meets the claim limitation of claim 32.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanhha Pham whose telephone number is (571) 272-1696. The examiner can normally be reached on Monday and Thursday 9:00AM - 9:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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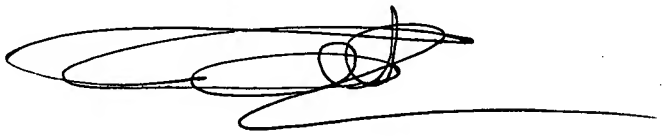

THANHHA S. PHAM
PRIMARY EXAMINER